A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 54305

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Fourth Semester

Electrical and Electronics Engineering

15UEE405- ANALOG INTEGRATED CIRCUITS

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The important semiconductor material for the fabrication of Integrated circuit is CO1- R

   (a) Gallium (b) Silicon (c) Germanium (d) Arsenide

2. In most of the IC's, the widely used metal for metallization is CO1- R

   (a) Zinc (b) Copper (c) Aluminium (d) Lead

3. The phase shift between input and output signal in inverting amplifier is CO2- U

   (a) 360^o (b) 270^o (c) 90^o (d) 180^o

4. If sine wave is applied to voltage follower, the output will be CO2- U

   (a) Sine wave (b) Square wave (c) Triangular wave (d) No output

5. The circuit is used to add a desired DC level to the output voltage is called CO3- U

   (a) Clipper (b) Clamber (c) Peak detector (d) Multivibrator

6. The number of OP-Amp used in Instrumentation Amplifier is CO3- R

   (a) One (b) Two (c) Three (d) Four

7. The multivibrator circuit with one stable state is called CO4- R

(a) Monostable multivibrator (b) Astable multivibrator

(c) Bistable multivibrator (d) Schmitt trigger

8. The expression for free running frequency of VCO is given by CO4- U

(a) $0.25R_TC_T$ (b) $0.50R_TC_T$ (c) R_TC_T (d) $0.25/R_TC_T$

9. The current limit protection is possible in the following voltage regulator CO5- R

(a) LM317 IC regulator (b) 723 IC regulator

(c) 78XX IC regulator (d) 79XX IC regulator

10. The electrical isolation between input and output circuit is obtained by CO5- R

(a) Regulator IC (b) Power Amplifier (c) Function Generator (d) Opto Coupler

PART – B (5 x 2= 10 Marks)

11. Define the term Photolithography in IC fabrication. CO1- R

12. List the ideal Op-Amp characteristics. CO2- R

13. Draw the diagram of sample and hold circuit. CO3- R

14. In the Monostable multivibrator ; R=100KΩ, and Time delay T=100ms, Calculate the value of 'C'. CO4- Apply

15. List the limitations of three terminal regulator. CO5- R

PART – C (5 x 16= 80Marks)

16. (a) With neat illustrations, Explain the various steps involved in the IC fabrication process. CO1- U (16)

Or

(b) Describe the following CO1- U (8)

(i) Epitaxial growth process

(ii) Types of IC packages CO1- U (8)

17. (a) Analyze the following circuit with example CO2- Ana (16)

(i) Differentiator

(ii) Integrator

Or

(b) Discuss in detail about the DC and AC characteristics of Op-Amp. CO2- Ana (16)

18. (a) Sketch the implementation of an Instrumentation Amplifier and explain its operation. Analyze its gain function. CO3- Ana (16)

Or

(b) Design and illustrate the following CO3- Ana (16)

(i) R-2R ladder type DAC.

(ii) Flash type ADC using Op-Amps.

19. (a) Explain the working of multivibrator using IC555 which has no stable states & Derive its expression for frequency. CO4- U (16)

Or

(b) With the help of schematic, Explain the operation of IC566 VCO. CO4- U (16)

20. (a) Explain the operation of switching regulator with neat sketch. Give its advantages. CO5- U (16)

Or

(b) Write short notes on the following CO5- U (16)

(i) IC723 Voltage Regulator

(ii) OptoCoupler IC

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